First Annual Report

Guardian Industries Corp. Consent Decree (Civil No. 15-13426)

Due: March 1, 2017

All capitalized terms not defined in this Annual Report shall have the same meaning as in the Consent Decree.

PARAGRAPH 63

1. Status of Guardian's progress toward implementing Section IV:

Guardian is progressing in an orderly manner with implementing the Section IV requirements. A summary of the affirmative actions taken under Section IV prior to December 31, 2016 are as follows:

Carleton Line 2:
Installed all Control Devices (SCR, DS and PD) and CEMS (inlet and outlet) in May 2015. Submitted an application to Michigan Department of Environmental Quality (MDEQ) to integrate the Consent Decree Civil No. 15-13426 (CD) requirements into its Title V permit.

Corsicana Facility:
Installed Low NOx Burners and outlet CEMS in 2015 and submitted an interim NOx emission limit by March 1, 2017.

Dewitt Facility:
Received a Permit to Install all Control Devices (SCR, DS and PD) and CEMS (inlet and outlet) during its 2017 Cold Tank Repair (CTR). The permit incorporates all CD requirements. The Control Devices and CEMS are scheduled to be online in July 2017.

Floreffe Facility:
Permanently ceased all processing operations as of August 10, 2015.

Geneva Facility:
Received a draft revised Title V Permit, which when final will allow for the installation of all Control Devices (SCR, DS and PD) during its CTR scheduled for 2018. A new SO2 CEMS is scheduled to be installed in August 2017.

Kingsburg Facility:
Installed inlet CEMS and submitted an application to San Joaquin Valley Air Pollution Control District (SJAPCD) to integrate the CD requirements into its Title V permit.

Richburg Facility:
Installed an outlet CEMS in 2016.

2. ***Identification of which Facilities will have Control Devices installed by December 31 of 2016 (or, if applicable, will shut down);***

- The Kingsburg Facility was already operating Control Devices prior to the Effective Date of the Consent Decree.
- The Floreffe Facility permanently ceased all processing operations as of August 10, 2015 and met the definition of the Surrender of Air Permits or Air Permit Conditions on November 23, 2015.
- Carleton Line 2 started operation of Control Devices on May 28, 2015.

3. ***A description of any Section IV Compliance Requirements completed;***

A. *Emission Controls and Limits at the Kingsburg Facility*
7. Notwithstanding any other requirement or condition in this Consent Decree, Guardian shall comply with all emission limits and requirements in District Rule 4354, as approved by EPA into the California SIP ("SIP-approved District Rule 4354").

The Kingsburg Facility strives to comply with all requirements of its Title V permit. During 2016, deviations from permit conditions related to Rule 4354 occurred. Some of those deviations were related to breakdown conditions of the Control Devices. All deviations were reported in the Facility's semi-annual Reports of Required Monitoring, and the Facility's Annual Compliance Certification for the compliance period.

B *NOx Emission Controls, Limits, and Compliance Schedule:*
8. Interim NOx Emission Controls and Limits at the Corsicana Facility.

a. *Installation of High Efficiency Burners. By no later than December 31, 2015, Guardian shall install and continuously operate 24 Global Combustion Burners VitroGLO-SP or equivalent at the Corsicana Facility's Furnace.*

The Corsicana Facility completed installation of Global Combustion Burners VitroGLO-SP high efficiency burners on November 10, 2015 and has been continuously operating the burners since that date.

b. Installation of NOx CEMS. By no later than December 31, 2015, Guardian shall install, calibrate, certify, maintain, and operate NOx CEMS in accordance with the requirements specified in Paragraph 26.

A NOx CEMS was installed at the Corsicana Facility and passed the initial CEMS Certification on December 9, 2015. The CEMS has been calibrated, maintained and operated in accordance with the requirements specified in Paragraph 26 except during CEMS downtime periods which mainly were periods when the CEMS instrumentation was damaged as a result of three lightning strikes that occurred in 2016.

c. Interim NOx Emission Limit. Immediately after installing the high efficiency burners, Guardian will use the high efficiency burners at all times the Furnace is Operating. After installation of the CEMS, Guardian will optimize the high efficiency burners to reduce NOx emissions. Optimization shall include procedures to evaluate the impact of different burner operating parameters on the emission reduction achieved. After the CEMS is installed and optimization is complete, but by no later than 120 Days after installing the CEMS, Guardian will collect data from the NOx CEMS for 180 Days. By no later than 60 Days after completing the 180-Day data collection, Guardian will propose to EPA for review and approval separate interim NOx emission limits for clear and colored glass products for the Corsicana Facility's Furnace in the form of 30-day Rolling Average Emission Rates.

The Corsicana Facility has operated the high efficiency burners at all times since their installation. It has optimized the burners with the installation of the NOx CEMS in order to reduce the NOx emissions. On April 5, 2016 the burner optimization was completed and the Facility started the 180-day data collection period, which included both clear and ultraclear glass production. The data collection was scheduled to end on October **4**, 2016; however, due to the extended CEMS downtime resulting from damage due to two lightning strikes that occurred during the April 5 to October 4 period, the Corsicana Facility was not able to collect sufficient data. On August 19, 2016, Guardian submitted a request to the United States Environmental Protection Agency (EPA) to extend the data collection period to December 31, 2016 which was subsequently granted by EPA. A proposed interim limit was submitted by the due date of March 1, 2017.

i. Upon proposing interim NOx emission limits, Guardian shall continuously comply with the proposed 30-day Rolling Average Emissions Rates. If the EPA disapproves the interim NOx emission limit(s) proposed by Guardian, EPA shall establish interim NOx emission limit(s) and notify Guardian of the new interim NOx emission limit(s). Unless Guardian disputes EPA's new interim NOx emission limit(s) within 30 days of its receipt of that notice pursuant to the dispute resolution provisions of this Consent Decree, Guardian shall comply with EPA's new interim NOx emission limit(s) within 45 Days.

Not applicable for this reporting period. As the proposed limit was submitted by the due date of March 1, 2017, compliance with the proposed limit was not applicable during this reporting period.

ii. Guardian shall comply with the interim NOx emission limit established in subparagraph 8.c.i. until the compliance deadlines specified in Table 1 for installing final NOx emission controls.

Not applicable for this reporting period. The Corsicana Facility did not establish an interim NOx limit under the Consent Decree prior to December 31, 2016.

iii. Guardian will demonstrate compliance with the applicable interim NOx emission limit continuously using a NOx CEMS except during Furnace Startup, Canal Maintenance or Abnormally Low Production Rate Days. Guardian may exclude the emissions generated during Furnace Startup, Canal Maintenance or Abnormally Low Production Rate Days from the 30-day Rolling Average Emission Rate. During the Furnace Startup, Canal Maintenance or Abnormally Low Production Rate Day(s) excluded from the 30-day Rolling Average Emission Rate, a NOx CEMS shall be used to demonstrate the Furnace's compliance with the following pound per Day NOx limit on a 24-hour Block Average:

Not applicable for this reporting period. The Corsicana Facility did not establish an interim NOx limit under the Consent Decree prior to December 31, 2016.

9. NOx Emission Controls Installation Schedule for All Covered Facilities. Guardian shall install SCRs in compliance with this Paragraph on its Furnaces according to the schedule in Table 1. If a Furnace undergoes a Cold Tank Repair prior to a deadline listed in Table 1, it must install a SCR at the time of the Cold Tank Repair. For the Kingsburg Facility, where Guardian is already operating a SCR, Guardian must comply with the conditions of Paragraph 11 by no later than November 30, 2015.

Table 1: NOx Emission Controls Installation Schedule

Compliance Deadline	*Total number of Furnaces that must have completed installation of a SCR or shutdown in accordance with Paragraph 24.*	*Facility and Furnace*
Effective Date	*1*	*Kingsburg (existing)*
December 31, 2015	*2*	*Kingsburg, and either Floreffe or Carleton Line 2*
December 31, 2016	*3*	*Kingsburg, Floreffe, and Carleton Line 2*
December 31, 2017	*4*	*Kingsburg, Floreffe, Carleton Line 2, and 1 of the following Furnaces: Carleton Line 1, DeWitt, or Geneva*
December 31, 2018	*5*	*Kingsburg, Floreffe, Carleton Line 2, and 2 of the following Furnaces: Carleton Line 1, DeWitt, or Geneva*
December 31, 2019	*6*	*Kingsburg, Floreffe, Carleton Line 2, Carleton Line 1, Dewitt, and Geneva*
December 31, 2021	*7*	*Kingsburg, Floreffe, Carleton Line 2, Carleton Line 1, DeWitt, Geneva, and Richburg*
December 31, 2024	*8*	*Kingsburg, Floreffe, Carleton Line 2, Carleton Line 1, DeWitt, Geneva, Richburg, and Corsicana*

Guardian installed and operated a SCR on Carleton Line 2 since May 28, 2015. The Floreffe Facility was shut down on August 10, 2015. The Kingsburg Facility had installed a SCR prior to 2015, and therefore complied with the conditions of Paragraph 11.

10. *Final NOx Emission Controls and Limits for All Facilities Except as Provided in Paragraph 11.*

a. NOx Emission Controls.

By no later than the first Operating Day after the deadline in Table 1, Guardian shall Operate each Furnace passing all stack gases (except during Furnace Startup; Control Device Startup; Malfunction of the SCR, DS, or PD; or Maintenance of the SCR, DS, or PD) through a SCR in compliance with the following:

i. SCRs must be designed for a removal efficiency of at least 90 percent; and

The Carleton Line 2 SCR is designed for 90% removal as specified by the equipment manufacturer and described in the contract between Guardian and [redacted].

ii. *While each SCR is operating, Guardian shall continuously operate the SCR in accordance with good air pollution control practice for minimizing emissions to the extent practicable, SCR consistent with 40 C.F.R. § 60.11(d), taking into consideration Ammonia Slip.*

The Carleton Line 2 SCR has been in operation continuously in accordance with the required standard except during a CTR period from August 3, 2016 to October 31, 2016. The ammonia slip has been monitored continuously by an ammonia CEMS installed on the exhaust duct as part of the Control Device installation. The Control Device unit in Carleton Line 2 is a catalyst impregnated ceramic filter system referred to as a [redacted].

b. Final NOx Emission Limits. Commencing on the 30th[1] Operating Day after completing the Control Device Startup period (but in no case later than the compliance deadlines in Table 1), Guardian shall comply with an 80% 30-day Rolling Average NOx Removal Efficiency, except as provided in subparagraph 10.c. Guardian shall demonstrate compliance with the 80% 30-day Rolling Average NOx Removal Efficiency using a NOx CEMS.

The Carleton Line 2 CEMS passed its initial CEMS Certification on August 26, 2015 and compliance with the 80% 30-day Rolling Average NOx Removal Efficiency commenced on September 25, 2015. Compliance was demonstrated using a NOx CEMS, except as provided in subparagraph 10.c. of the Consent Decree (as noted below).

c. NOx Limit During Furnace Startup, Control Device Startup, Malfunction of the SCR, DS, or PD, and Maintenance of the Canals, SCR, DS, or PD.

i. *NOx Limit During Furnace Startup. For no more than the 30 Days allowed for Furnace Startup, the Furnace exhaust may bypass the SCR to avoid having the operating inlet temperature of the SCR fall below its operational range. During these bypass Days Guardian shall burn no more than five (5) million standard cubic feet of natural gas in that Furnace per Day. When technically feasible and available, Guardian will operate the SCR on the Furnace exhaust.*

[1] As noted in the response to Item #4 of Paragraph 63, Guardian requested "first Operating Day" be changed to "30th Operating Day" to allow for the collection of sufficient data for the averaging period.

Carleton Line 2 had a CTR in 2016. The Furnace was shut down on August 3, 2016 and the Furnace began heating up on October 12, 2016. Although the full cycle of the Furnace Startup as defined in Paragraph 6.aa was completed on November 2, the SCR portion of the [redacted] Control Device (ammonia injection) became operational on October 31, 2016, once the gas temperature reached the minimum acceptable operational temperature of the SCR. During the SCR bypass period, the Carleton Line 2 furnace burned less than five (5) million standard cubic feet of natural gas per Day.

ii. *NOx Limit During Control Device Startup or Malfunction of the SCR, DS or PD. For each Operating Day that the SCR does not operate or is not operating normally because of the Control Device Startup or Malfunction of the SCR, DS, or PD for any period of time, Guardian may exclude that Day's. Removal Efficiency from the 30-day Rolling Average NOx Removal Efficiency. During the Days excluded from the 30-day Rolling Average NOx Removal Efficiency, a NOx CEMS shall be used to demonstrate compliance with the following pound per Day NOx limit on a 24-hour Block Average for each Covered Facility*:

Table 2: NOx Emission Limits During Days Where the SCR Is Not Operating Pursuant to Subparagraph 10.c. ii.

Facility and Furnace	***NOx $_{W/o\ SCR}$ (lb/Day)***	Applicable for this Reporting Period
Floreffe	*6,000*	Shutdown
Carleton #1	*6,314*	NA
Carleton #2	*10,433*	Yes
Corsicana	*14,400*	NA
Richburg	*10,800*	NA
Geneva	*8,134*	NA
DeWitt	*7,800*	NA
Kingsburg	*8,400*	Yes

For Carleton Line 2, in this reporting period, there were no exclusions from the 30-day Rolling Average NOx Removal Efficiency due to Malfunction of the SCR, DS, or PD and therefore compliance with the Furnace's specific NOx limit specified in Table 2 on a 24-hour Block Average was not used. There was no Control Device Startup during this reporting period for Carleton Line 2.

iii. NOx Limit During Maintenance of the Canals, SCR, DS or PD. For any Operating Day where Maintenance activities on the canals, SCR or DS/PD are performed, Guardian may exclude the Maintenance Day from the 30-day Rolling Average NOx Removal Efficiency. For any Day which

is excluded from the 30-day Rolling Average NOx Removal Efficiency, a NOx CEMS shall be used to demonstrate compliance on a 24-hour Block Average with the following pound per Day limit:

$$NO_{X\ SCR\ Maint} = \frac{MH\ \times NO_{X\ W/o\ SCR}}{24} + \frac{NH\ \times\ NO_{W/o\ SCR} \times 0.2}{24}$$

This subparagraph only applies to Carleton Line 2 for this reporting period. Carleton Line 2 did not exclude any Day from the 30-day Rolling Average NOx Removal Efficiency due to Maintenance activities and therefore, this paragraph is not applicable for this reporting period. Please note, however, the above formula has been programmed in the Carleton Line 2 data acquisition system (DAS) to automatically calculate the limit when applicable.

11. Final NOx Emission Controls and Limits for the Kingsburg Facility.

a. NOx Emission Controls.

By no later than the Effective Date for the Kingsburg Facility, Guardian shall Operate the Furnace (except during start-up as defined by SIP-approved District Rule 4354; or Maintenance of the SCR, DS, or PD) passing all stack gases through the SCR in compliance with the following:

i. *While the SCR is operating, Guardian shall continuously operate the SCR in accordance with good air pollution control practice for minimizing emissions to the extent practicable, consistent with 40 C.F.R. § 60.11(d), taking into consideration Ammonia Slip.*

Since the Effective Date, the Kingsburg Facility SCR has been in operation continuously (except during the Maintenance of the SCR, DS, or PD) in accordance with good air pollution control practice for minimizing emissions to the extent practicable, consistent with 40 C.F.R. § 60.11(d), taking into consideration Ammonia Slip. Ammonia slip has been calculated based on parameters measured by the CEMS installed at the stack in accordance with the Kingsburg Facility's SJVAPCD Permit.

b. Final NOx Emission Limits. By no later than November 30, 2015, Guardian shall comply with an 80% 30-day Rolling Average NOx Removal Efficiency, except as provided in subparagraph 10.c. Guardian shall demonstrate compliance with the 80% 30-day Rolling Average NOx Removal Efficiency using a NOx CEMS.

The Kingsburg Facility has been in compliance with 80% 30-day Rolling Average NOx Removal Efficiency since October 7, 2015 except (i) as provided in subparagraph 10.c, and (ii) a period from December 17, 2015 to February 27, 2016. On February 17, 2016, the Facility discovered that the 30-Day Rolling Average NOx Removal Efficiency data was below the 80% removal efficiency

threshold. The Facility immediately increased the ammonia in the system as much as reasonably possible and came into compliance with the 80% 30-day Rolling Average NOx Removal Efficiency on February 27, 2016. Guardian notified all the Parties of interest within 10 days of discovery in accordance with Paragraph 64 notification requirements.

12. Alternative Compliance Option.

a. If Guardian is able to reduce the 30-day Rolling Average Emission Rate into the SCR to less than 8.0 lb NOx per Ton of glass produced for at least 180 consecutive Days of normal Operation (excluding periods that qualify as Maintenance, Malfunction, Furnace Startup, Control Device Startup, or Abnormally Low Production Rate Days), Guardian may notify EPA and the applicable Plaintiff-Intervenor, if any, that it elects to comply with a 30-day Rolling Average Emission Rate of 1.6 lb NOx per Ton of glass produced (measured after the SCR) in lieu of the final NOx emission limit(s) in subparagraph(s) 10.b. and/or 11.b. Guardian shall comply with a 30-day Rolling Average Emission Rate of 1.6 lb NOx per Ton of glass produced 60 Days after Guardian provides notice to EPA and the applicable Plaintiff-Intervenor, if any. After electing to comply with the alternative compliance option in this Paragraph, Guardian may not revert to complying with the final NOx emission limit(s) in subparagraph(s) 10.b. and/or 11.b. If EPA determines that Guardian has not satisfied any of the following criteria, Guardian must continue complying with the applicable final NOx emission limit(s) in subparagraph(s) 10.b. and/or 11.b.

Guardian did not exercise this option in this reporting period.

b. Guardian's notice must include all 30-day rolling average data for NOx for the 12-month period prior to the date the notice is submitted. Guardian must clearly identify any Days that it believes are exempted from the 30-day Rolling Average Emission Rate and indicate which exemption applies (i.e., Maintenance, Malfunction, Furnace or Control Device Startup, or Abnormally Low Production Rate Days).

Guardian did not exercise this option in this reporting period.

c. Guardian's notice must identify any equipment that it installed and explain all actions that it took in order to achieve reduced emissions at the Furnace for which it seeks an Alternative Compliance Option. Guardian shall continue to operate any equipment and continue all actions necessary to maintain such emissions reductions.If Guardian is able to reduce the 30-day Rolling Average Emission Rate into the SCR to less than 8.0 lb NOx per Ton of glass produced.

Not applicable for this reporting period.

d. Guardian may not elect to comply with an alternative compliance option for a Furnace that has had any exceedances of the Final NOx Emission Limit(s)

required by subparagraph(s) 10.b. and/or 11.b. within the last twelve (12) months prior to the election allowed by this Paragraph 12.

Not applicable for this reporting period.

e. Guardian must continue to operate the SCR at all times as required in the applicable Paragraph(s) 10 and/or 11 above. However, Guardian may also comply with a NOx limit for Abnormally Low Production Rate Days, which shall be calculated as follows: Guardian may exclude the NOx emissions generated from that Furnace during an Abnormally Low Production Rate Day (or Days) from the 30-day Rolling Average Emissions Rate. During these Days, a CEMS shall be used to demonstrate Guardian's compliance on a 24-hour Block Average with the following pound per Day limit:

$$NO_{X\,Abn} = 1.6\frac{lb\ NO_X}{ton} \times \left[\frac{P}{0.35}\right]$$

None of the applicable Covered Facilities had Abnormally Low Production Rate Days in this reporting period and therefore, this subparagraph is not applicable for this reporting period.

C. SO2 Emission Controls, Limits, and Compliance Schedule

13. SO2 Emission Control Installation Schedule. Except for the Kingsburg Facility and Floreffe Facility (where Guardian is already operating DSs), by no later than the applicable deadlines in the compliance schedule listed in Table 3, Guardian must install a DS for each Furnace. If a Furnace undergoes a Cold Tank Repair prior to a deadline listed in Table 3, it must install a DS at the time of the Cold Tank Repair.

Table 3: SO_2 Emission Controls and Compliance Schedule

Compliance Deadline	***Total number of Furnaces that must have completed installation of a DS or shutdown in accordance with Paragraph 24.***	***Facility and Furnace***
Effective Date	*2*	*Kingsburg (existing) and Floreffe (existing)*
December 31, 2016	*3*	*Kingsburg, Floreffe and Carleton Line 2*
December 31, 2017	*4*	*Kingsburg, Floreffe, Carleton Line 2, and 1 of the following Furnaces: Carleton Line 1, DeWitt, or Geneva*
December 31, 2018	*5*	*Kingsburg, Floreffe, Carleton Line 2, and 2 of the following Furnaces: Carleton Line 1, DeWitt, or Geneva*
December 31, 2019	*6*	*Kingsburg, Floreffe, Carleton Line 2, Carleton Line 1, DeWitt, and Geneva*
December 31, 2021	*7*	*Kingsburg, Floreffe, Carleton Line 2, Carleton Line 1, DeWitt, Geneva, and Richburg (convert Semi-Dry Scrubber to DS)*
December 31, 2024	*8*	*Kingsburg, Floreffe, Carleton Line 2, Carleton Line 1, DeWitt, Geneva, Richburg (convert Semi-Dry Scrubber to DS), and Corsicana*

Guardian installed and operated a DS on Carleton Line 2 since May 28, 2015. The Floreffe Facility was shut down in August 2015 and the Kingsburg Facility had installed a DS prior to December 31, 2015 as required in Table 3.

14. *Interim Emission Limit at the Richburg Facility.*
For the Richburg Facility, which is already operating a Semi-Dry Scrubber, Guardian shall comply with an interim emission limit of no more than 30 lb/hr of SO2 using the Semi-Dry Scrubber until Guardian installs the SCR or the deadline in Table 3, whichever occurs first.:

The CD does not specify an averaging period for the 30 lb/hr interim limit for SO2. Consistent with the averaging period for other CD emission limits, Guardian considers the averaging period to be 30-day rolling. The Richburg Facility has complied with an interim emission limit of 30 lb/hr of SO2 based on a 30-day rolling average using the Semi-Dry scrubber since the Effective Date of the Consent Decree, which was January 13, 2016. The Facility demonstrated compliance daily using a Sulfur Mass Balance in accordance with its Title V permit. The newly installed CEMS passed initial CEMS Certification on December 23, 2016 in accordance with Paragraph 26 of the Consent Decree. The Facility began to demonstrate compliance with the interim SO2 emission limit of 30 lb/hr using the CEMS based on the 30-Day Rolling Average since December 24, 2016.

15. *Final SO2 Emission Controls and Limits for All Facilities Except Kingsburg.*

a. SO2 Emission Controls.

By no later than the Effective Date for the Floreffe Facility, and the first Operating Day after the deadline in Table 3 for the remaining Covered Facilities, Guardian shall Operate each Furnace passing all stack gases (except during Furnace Startup; Control Device Startup; Malfunction of the DS or PD; or Maintenance of the DS or PD) through a DS.

The Floreffe Facility was shut down in August 2015, therefore, this Paragraph is only applicable to Carleton Line 2 for this reporting period. Carleton Line 2 has operated passing all stack gases continuously through a DS since May 28, 2015 except during a portion of Furnace Startup. Although the full cycle of the Furnace Startup as defined in Paragraph 6.aa completed on November 2, 2016, the DS portion of the [redacted] Control Device (dry sorbent injection) became operational on October 31, 2016.

b. Final SO2 Emission Limits.

By no later than December 31, 2015 for the Floreffe Facility and the 30th[2] Operating Day after the deadline in Table 3 for the remaining Covered Facilities, Guardian shall not exceed a 30-day Rolling Average Emission Rate of 1.2 lb SO2 per Ton of glass produced, except as provided in subparagraph 15.c. Guardian shall demonstrate compliance with the 30-day Rolling Average Emission Rate using a SO2 CEMS.

This subparagraph is only applicable to Carleton Line 2 for this reporting period since the Floreffe Facility was shut down in August 2015. Carleton Line 2 has not exceeded the 30-day Rolling Average Emission Rate limit of 1.2 lb SO2 per Ton of glass produced at any time during this reporting period except as provided in subparagraph 15.c below. Carleton Line 2 has demonstrated compliance with the 30-day Rolling Average Emission Rate using a SO2 CEMS.

[2] As noted in the response to Item #4 of Paragraph 63, Guardian requested "first Operating Day" be changed to 30th Operating Day." to allow for the collection of sufficient data for the averaging period.

c. SO2 Limit During Furnace Startup, Control Device Startup, Malfunction of the DS or PD, Maintenance of the DS or PD, and Abnormally Low Production Rate Days.

i. SO2 Limit During Furnace Startup. For no more than the 30 Days allowed for Furnace Startup, Furnace exhaust may bypass the DS to avoid having the operating inlet temperature of the DS fall below its operational range. During the Days that Furnace exhaust bypasses the DS, Guardian shall burn no more than five (5) million standard cubic feet of natural gas in that Furnace per Day. When technically feasible and available, Guardian will operate the DS on the Furnace exhaust.

Carleton Line 2 had a CTR in 2016. The Furnace was shut down on August 3, 2016 and the Furnace began heating up on October 12, 2016. Although the full cycle of the Furnace Startup as defined in Paragraph 6.aa ended on November 2, 2016 and the CEMS was recertified on November 14, 2016, the DS portion of the [redacted] (dry sorbent injection) became operational on October 31, 2016. During the DS bypass period, Carleton Line 2 Furnace burned less than five (5) million standard cubic feet of natural gas per Day.

ii. SO2 Limit During Control Device Startup or Malfunction of DS or PD. For any Operating Day during Control Device Startup or on which a Malfunction of the DS or PD occurs, Guardian may exclude the emissions generated during that Operating Day (or Days) from all Furnaces connected to that DS or PD from the 30-day Rolling Average Emission Rate. During the Day(s) excluded from the 30-day Rolling Average Emission Rate, a CEMS shall be used to demonstrate Guardian's compliance with the following pound per Day SO2 limit on a 24-hour Block Average:

Table 4: SO_2 Emission Limits During Days Excluded Pursuant to Subparagraph 15.c.

Facility and Furnace	*SO2 W/o DS (lb/Day)*	**Applicable for this Reporting Period**
Floreffe	*1,984*	Shutdown
Carleton #1	*3,095*	NA
Carleton #2	*3,224*	Yes
Corsicana	*3,095*	NA
Richburg	*3,819*	NA
Geneva	*3,472*	NA
DeWitt	*3,472*	NA

This subparagraph is only applicable to Carleton Line 2 for this reporting period. In this reporting period, there was no exclusion from the 30-day Rolling Average Emission Rate due to Malfunction of the DS or PD and there was no Control Device Startup. Therefore compliance with the Furnace's SO2 limit specified in Table 2 on a 24-hour Block Average was not used.

iii. SO2 Limit During Maintenance of the DS or PD. For any Operating Day when Maintenance is performed on the DS or PD, Guardian may exclude the emissions generated during that Operating Day (or Days) from that Furnace from the 30-day Rolling Average Emission Rate. During the Day(s) excluded from the 30-day Rolling Average Emission Rate, a CEMS shall be used to demonstrate Guardian's compliance with the following pound per Day SO2 limit on a 24-hour Block Average formula.

$$SO_{2\ Scrub\ Maint} = \frac{MH \times SO_{2\ w/o\ DS}}{24} + \frac{NH \times [1.2 \times \left[\frac{P}{0.35}\right]]}{24}$$

This subparagraph is only applicable to Carleton Line 2 for this reporting period. Carleton Line 2 did not exclude any operating day from the 30-day Rolling Average Emission Rate due to Maintenance activities therefore this paragraph is not applicable for this reporting period. However, the above formula has been programmed into the Carleton Line 2 data acquisition system (DAS) to automatically calculate the limit when applicable.

iv. SO2 Limit During Abnormally Low Production Rate Days.

No Abnormally Low Production Rate Days were observed at Carleton Line 2 in this reporting period.

16 Final SO2 Emission Controls and Limits for the Kingsburg Facility.
a. SO2 Emission Controls.
By no later than the Effective Date for the Kingsburg Facility, Guardian must Operate the Furnace passing all stack gases (except during start-up as defined by SIP approved District Rule 4354; or Maintenance of the DS or PD) through a DS.

Since October 7, 2015, the Kingsburg Facility has operated the Furnace passing all stack gases through the DS except during Maintenance of the DS or PD.

b. Final SO2 Emission Limits. Guardian shall not exceed a 30-day Rolling Average Emission Rate of 1.2 lb SO2 per Ton of glass produced except as provided in subparagraphs 16.b.i-iii. Guardian shall demonstrate compliance with the 30-day Rolling Average Emission Rate using an SO2 CEMS.

The Kingsburg Facility has not exceeded the 30-day Rolling Average Emission Rate of 1.2 lb SO2 per Ton of glass produced except as provided in subparagraphs 16.b.i-iii. A SO2 CEMS was used to demonstrate compliance.

i. *SO2 Limit During Start-up as Defined by SIP-approved District Rule 4354. Guardian shall comply with the requirements in SIP-approved District Rule 4354 during start-up as defined by SIP-approved District Rule 4354.*

This subparagraph is not applicable for this reporting period since the Kingsburg Facility did not have any start-up as defined by SIP-approved District Rule 4354 during this period.

ii. *SO2 Limit During Maintenance of the DS or PD. For any Operating Day where Maintenance activities on DS or PD are performed, Guardian may exclude the Maintenance Day from the 30-day Rolling Average Emission Rate. For any Day which is excluded from the 30-day Rolling Average Emission Rate, a SO2 CEMS shall be used to demonstrate compliance on a 24-hour Block Average*

The Kingsburg Facility has been in compliance with its 24-hour Block Average Emission Rate limit on any Operating Day where Maintenance activities on DS or PD were performed and that Operating Day was excluded from the 30-day Rolling Average Emission Rate for this reporting period. For any Day excluded from the 30-day Rolling Average Emission Rate, a SO2 CEMS was used to demonstrate compliance.

iii. *SO2 Limit During Idling. During Idling, Guardian may exclude the SO2 emissions generated from that Furnace during that Operating Day (or Days) from the 30-day Rolling Average Emissions Rate for the Kingsburg Facility. During the Days excluded from the 30-day Rolling Average Emissions Rate, a SO2 CEMS shall be used to demonstrate Guardian's compliance with an 1,190 pounds per Day SO2 limit.*

No idling occurred at the Kingsburg Facility during this reporting period. Therefore this subparagraph is not applicable for this reporting period.

D. Increased Production Capacity

17. If increased production capacity at a Furnace is authorized by a revised Permit limit, the applicable pound per Day limit(s) established in Paragraphs 10, 15, and/or 16 will be increased using the CD formula:
*New pound per Day limit = original pound per Day limit * CODnew/CODold*

Pursuant to the Iowa Department of Natural Resources (DNR) Permit number 95-A-154-P4 issued on July 28, 2016 for the Dewitt Facility CTR project, an increase in production capacity was authorized and the applicable pound per Day limits established in Paragraphs 10, 15, and/or 16 were increased according to the CD formula provided above. The new limits are [redacted] NOx and [redacted] lb/day SO2.

E. PM Emission Controls, Limits, and Compliance Schedules

18. Except for the Kingsburg Facility, Floreffe Facility, and Richburg Facility (where Guardian already operates Particulate Devices), by no later than the applicable deadlines in Table 5, Guardian must install a PD for each Furnace. If a Furnace undergoes a Cold Tank Repair prior to a deadline listed in Table 5, Guardian must install and begin operating a PD at the time of the Cold Tank Repair.

Table 5: PM Emission Controls and Compliance Schedule

Compliance Deadline	*Total number of Furnaces that must have completed installation of a PD or shutdown in accordance with Paragraph 24.*	*Facility and Furnace*
Effective Date	*3*	*Kingsburg (existing), Richburg (existing), and Floreffe (existing)*
December 31, 2016	*4*	*Kingsburg, Richburg, Floreffe, and Carleton Line 2*
December 31, 2017	*5*	*Kingsburg, Richburg, Floreffe, Carleton Line 2, and 1 of the following Furnaces: Carleton Line 1, DeWitt, or Geneva*
December 31, 2018	*6*	*Kingsburg, Richburg, Floreffe, Carleton Line 2, and 2 of the following Furnaces: Carleton Line 1, DeWitt, or Geneva*
December 31, 2019	*7*	*Kingsburg, Richburg, Floreffe, Carleton Line 2, Carleton Line 1, DeWitt, and Geneva*
December 31, 2024	*8*	*Kingsburg, Richburg, Floreffe, Carleton Line 2, Carleton Line 1, DeWitt, Geneva, and Corsicana*

Carleton Line 2 installed and operated a PD since May 28, 2015. The Floreffe Facility was shut down on August 10, 2015. The Kingsburg and Richburg Facilities both already had a PD installed prior to the Effective Date of January 13, 2016 as required in Table 5.

19. *Final PM Emission Controls and Limits for All Facilities Except Kingsburg:*
a. PM Emission Controls.
By no later than the Effective Date for the Floreffe and Richburg Facilities, and the first Operating Day after the deadline in Table 5 for the remaining Facilities, Guardian shall Operate each Furnace passing all stack gases (except during Furnace Startup; Control Device Startup; Malfunction of the PD; or Maintenance of the PD) through a PD.

The Floreffe Facility was shut down on August 10, 2015. The Richburg Facility operated its Furnace passing all stack gases through a PD since the CD Effective Date of January 13, 2016 except during Malfunction and Maintenance of the PD. Carleton Line 2 operated its Furnace passing all stack gases through a PD during

all Furnace Operating Days since May 28, 2015 in accordance with Table 5 requirements.

b. Final PM Emission Limit.
Guardian shall not exceed a limit of 0.45 lb of PM per Ton of glass produced.

This subparagraph is only applicable to the Richburg Facility and Carleton Line 2 for this reporting period. Both the Richburg Facility and Carleton Line 2 did not exceed the limit of 0.45 lb of PM per Ton of glass produced during this reporting period and demonstrated compliance with the limit based on the 2015 and 2016 annual compliance stack testing.

20. Final PM Emission Controls and Limits for the Kingsburg Facility:
a. PM Emission Controls.
By no later than the Effective Date, Guardian shall Operate the Kingsburg Furnace passing all stack gases (except during Startup as defined by District Rule 4354; or Maintenance of the PD) through a PD.

The Kingsburg Facility has passed all furnace stack gases through the PD since October 7, 2015 except during Maintenance of the PD.

b. Final PM Emission Limit.
Guardian shall not exceed a limit of 0.45 lb of PM per Ton of glass produced.

The Kingsburg Facility demonstrated compliance with the limit of 0.45 lb of PM per Ton of glass produced based on the June 2016 initial stack testing.

21. Compliance with the PM emission limits at all Covered Facilities shall be demonstrated through annual stack tests and using EPA Test Method 5 (40 C.F.R. Part 60, Appendix A-3). Guardian shall conduct an initial stack test on each Furnace by no later than 180 Days after the applicable compliance deadline in Table 5 and once each Calendar Year thereafter.

All Covered Facilities with PDs installed demonstrated compliance with the PM emission limit of 0.45 lb of PM per ton pf glass produced for this reporting period using EPA Test Method 5 (40 C.F.R. Part 60, Appendix A-3). Guardian conducted an initial stack test on the Kingsburg and Richburg Facilities and Carleton Line 2 within 180 Days after their applicable compliance deadlines in Table 5.

F. H2SO4 Controls, Limits, and Compliance Schedules
22. Final H2SO4 Controls and Limits.
a. H2SO4 Controls. By no later than the first Operating Day after the compliance deadlines in Table 3, Guardian shall Operate each Furnace equipped with a DS passing all stack gases through the DS (except during a Furnace

Startup, Control Device Startup, a Malfunction of the DS and PD, and Maintenance of the DS or PD).

This subparagraph is only applicable to the Kingsburg and Floreffe Facilities and Carleton Line 2 for this reporting period. The Floreffe Facility was shut down on August 10, 2015. Carleton Line 2 and the Kingsburg Facility operated their Furnaces passing all stack gases through a DS except during Malfunction and Maintenance of the PD and DS since the effective date requirement in Table 3.

b. Final H2SO4 Limits.
Guardian shall not exceed a H2SO4 emission limit of 1.6 lb of H2SO4 per hour.

This subparagraph is only applicable to the Kingsburg and Floreffe Facilities and Carleton Line 2 for this reporting period. The Floreffe Facility was shut down on August 10, 2015. Carleton Line 2 demonstrated compliance with the emission limit of 1.6 lb of H2SO4 per hour both using EPA Conditional Test Method CTM 13 and CTM 13B in February 2016 compliance stack testing. Carleton Line 2 failed to comply with the emission limit of 1.6 lb of H2SO4 per hour using CTM 13B in July and October 2015 compliance stack testing. Guardian discussed the test methods with EPA and EPA's environmental measurement expert verbally agreed that the CTM 13B tests method was not appropriate. Guardian submitted a request on May 23, 2016 to EPA to allow using CTM 13 for measuring H2SO4 emission from the float glass furnace stack. The request was granted by EPA and Test Method CTM 13 was added in the draft amended CD which is in process.

The Kingsburg Facility demonstrated compliance with the emission limit of 1.6 lb of H2SO4 per hour using CTM 13 but failed using CTM 13B in June 2016 initial compliance stack testing. EPA was notified of this violation on August 11, 2016. Guardian and the EPA are in the process of amending the Consent Decree to allow for the use of CTM 13 to demonstrate compliance with the H2SO4 limit of 1.6 lb per hour.

23. Compliance with the H2SO4 emission limits shall be demonstrated through annual stack tests and using EPA Conditional Test Method CTM 13A or B. Guardian shall conduct an initial stack test on each Furnace by no later than 180 Days after the applicable deadline in Table 3 and once each Calendar Year thereafter.

Guardian demonstrated compliance with the H2SO4 emission limit using EPA Conditional Test Method CTM 13 or CTM 13B for all applicable Facilities. Guardian discussed the test methods with EPA and EPA's environmental measurement expert verbally agreed that the CTM 13B tests method was not appropriate. Guardian submitted a request on May 23, 2016 to EPA to allow using CTM 13 for measuring H2SO4 emission from a float glass furnace stack. The request was approved by EPA and Test Method CTM 13 was added in the draft amended CD which is in process. The initial stack test was conducted at all

applicable Facilities within 180 Days of the applicable compliance deadlines in Table 3.

G. Shutdown of Furnaces

24. The permanent shutdown of a Furnace at a Covered Facility and the Surrender of Air Permits or Air Permit Conditions for that Furnace will be deemed to satisfy all requirements of Sections IV of this Consent Decree applicable only to that Furnace on and after the later of: (i) the date of the permanent shutdown of the Furnace; or (ii) the date of the Surrender of Air Permits or Air Permit Conditions. If Guardian elects to permanently shut down a Furnace at a Covered Facility, Guardian must provide written notice of the proposed permanent shutdown to the United States and applicable Plaintiff-Intervenor in accordance with Section XVI of this Decree (Notices), by (i) no later than the Effective Date with respect to a Furnace that was permanently shut down prior to the Effective Date, or (ii) upon the Surrender of Air Permits or Air Permit Conditions and no later than the compliance deadline in Tables 1, 3, and 5 for any other Furnace. Such notification shall include any written correspondence to the permitting authority relating to the Surrender of Air Permits or Air Permit Conditions for that Furnace.

The Floreffe Facility furnace permanently ceased all processing operations on August 10, 2015. Guardian received a notice of operating permit termination for its Floreffe Facility from the County of Allegheny on November 23, 2015. Guardian submitted a written notification to EPA on December 7, 2016 documenting the notice of shutdown and the local agency confirmation of "Surrender of Air Permits or Air Permit Conditions."

H. CEMS Installation, Calibration, Certification, Maintenance, and Operation

25. For each Furnace listed in Table 6, Guardian shall install, calibrate, certify, maintain, and operate NOx CEMS (on both the Inlet and Outlet of the DS) and SO2 CEMS in accordance with the requirements specified in Paragraph 26 by no later than the applicable deadlines specified in Table 6.

TABLE 6: CEMS Compliance Deadlines

Facility and Furnace	*NOx CEMS Inlet Deadline*	*NOx CEMS Outlet Deadline*	*SO_2 CEMS Deadline*
Floreffe	*December 31, 2015*	*Existing*	*December 31, 2015*
Carleton #1	*Upon installation of controls under Paragraph 9*	*December 31, 2017*	*December 31, 2017*
Carleton #2	*December 31, 2015*	*December 31, 2015*	*December 31, 2015*
Corsicana	*Upon installation of controls under Paragraph 9*	*December 31, 2015*	*December 31, 2015*
Richburg	*Upon installation of controls under Paragraph 9*	*December 31, 2016*	*December 31, 2016*
Geneva	*Upon installation of controls under Paragraph 9*	*Existing*	*Upon installation of controls under Paragraph 13*
DeWitt	*Upon installation of controls under Paragraph 9*	*December 31, 2017*	*December 31, 2017*
Kingsburg	*October 31, 2015*	*Existing*	*Existing*

The Floreffe Facility Furnace permanently ceased all processing operations on August 10, 2015. Guardian installed, calibrated, certified, maintained, and operated NOx CEMS (on both the Inlet and Outlet of the DS) and SO2 CEMS in accordance with the requirements specified in Paragraph 26 as specified in the following table:

Facility and Furnace	NOx CEMS Inlet Installed and certified	NOx CEMS Outlet Installed and Certified	SO_2 CEMS Outlet Installed and Certified
Carleton Line 2	August 26, 2015	August 26, 2015	August 26, 2015
Kingsburg	October 7, 2015	Existing	Existing
Corsicana	NA	December 9, 2015	December 9, 2015
Richburg	NA	December 23, 2016	December 23, 2016

29. Good Air Pollution Control Practices. At all times, including during Abnormally Low Production Rate Days, Idling, a Furnace Startup, a Control Device Startup, Malfunction, and Maintenance, Guardian shall maintain and operate all Furnaces, all Control Devices, and any other associated air pollution control equipment in accordance with 40 C.F.R. § 60.11(d).

Guardian believes that, at all times during this reporting period, it maintained and operated all Furnaces, all Control Devices, and any other associated air pollution control equipment in accordance with 40 C.F.R. § 60.11(d). As noted in the response to Paragraph 64 below, Guardian experienced monitoring issues during this reporting period but those issues did not affect the operation or performance of the Control Device.

30. Maintenance for Control Devices and Canal Changes at the Covered Facilities:

a. Scheduled or Preventive Maintenance on Control Devices. Any Operating hour that is exempted from the applicable 30-day Rolling Average Emission Rate because of Maintenance being performed on a Control Device is subject to the following restrictions and must comply with the following requirements: Scheduled or preventive Maintenance of Control Devices shall occur and shall be completed while the Furnace(s) connected to the Control Device(s) is not Operating, unless the Furnace connected to the Control Device is scheduled to have a Continuous Operating Year. During a Continuous Operating Year, scheduled or preventive Maintenance on the Control Devices may be conducted while the Furnace(s) connected to the Control Device(s) is Operating. All Control Device Maintenance occurring during a Continuous Operating Year must also be performed in accordance with the following requirements:

i. Maintenance on all add-on Control Devices at each Covered Facility shall not exceed 144 hours total per Calendar Year.

This requirement is only applicable to the Kingsburg Facility and Carleton Line 2 for this reporting period. Maintenance on all add-on Control Devices at the

Kingsburg Furnace did not exceed 144 hours total per Calendar Year for this reporting period and the Carleton Line 2 Furnace did not have any Maintenance on add-on Control Devices during this reporting period.

ii. Bypassing a SCR for the purpose of preventive Maintenance shall not exceed 144 hours per Calendar Year. Bypass of the SCR required as a result of bypassing the PD or DS shall count towards the 144 hour limit.

This requirement is only applicable to the Kingsburg Facility and Carleton Line 2 for this reporting period. The SCR bypass for the purpose of preventive Maintenance did not exceed 144 hours per Calendar Year for the Kingsburg Furnace and the Carleton Line 2 Furnace did not have any Maintenance on add-on Control Devices during this reporting period.

iii. Bypassing a PD for the purpose of preventive Maintenance shall not exceed 144 hours per Calendar Year. Furthermore, if a PD is bypassed, the associated DS and SCR must be bypassed as well.

This requirement is only applicable to the Kingsburg Facility and Carleton Line 2 for this reporting period. The PD, DS and SCR bypass for the purpose of preventive Maintenance did not exceed 144 hours per Calendar Year for the Kingsburg Furnace and the Carleton Line 2 Furnace did not have any Maintenance on add-on Control Devices during this reporting period.

iv. Bypassing a DS for the purpose of preventive Maintenance shall not exceed 144 hours per Calendar Year. Bypass of the DS required as a result of bypassing the PD shall count towards the 144 hour limit.

This requirement is only applicable to the Kingsburg Facility and Carleton Line 2 for this reporting period. The DS bypass for the purpose of preventive Maintenance did not exceed 144 hours per Calendar Year for the Kingburg Furnace and the Carleton Line 2 Furnace did not have any Maintenance on add-on Control Devices during this reporting period.

b. Canal Changes. This subparagraph does not apply to the Kingsburg Facility. No more than once every 2 calendar years, Guardian is permitted 96 hours to complete a Canal Change on their downstream equipment. In the event a Canal Change becomes necessary in less than 2 years, Guardian shall notify EPA and the applicable Plaintiff-Intervenor at least 30 days prior to the Canal Change to provide the opportunity for the EPA and the applicable Plaintiff-Intervenor to investigate the necessity of Canal Change and object. During this period, the Furnace will Operate at Abnormally Low Production Rate, good air pollution control practices will be used at all times, the DS and PD (if technologically feasible for the catalyst-impregnated ceramic filter system) must be operated, and the SCR must be operated unless the inlet temperature or flow to the SCR drops to less than 115% of the minimum operating temperature or flow (as defined by

the SCR vendor) for 15 consecutive minutes, and then Guardian may discontinue use of the SCR until temperature and flow stabilize at 115% of the recommended minimums.

None of the Covered Facilities had a Canal Change in this reporting period. Therefore, this subparagraph is not applicable for this reporting period.

31. *Source/Stack Testing. All source/stack tests required by the Consent Decree shall be conducted in accordance with the requirements of the specified Test Method and shall be performed under representative Operating conditions or applicable state requirements for the Furnace being tested. Each test shall be comprised of at least three (3) valid one-hour stack test runs. Guardian shall discard any invalid test runs, such as those that are compromised because of sample contamination. If a test run is discarded, Guardian shall replace it with an additional valid test run. Guardian shall report the results of the discarded test runs to EPA and shall provide all information necessary to document why the test run was not valid. Source/stack testing shall not be conducted during Abnormally Low Production Rate Days, Idling, a Furnace Startup, a Control Device Startup, a Malfunction of the Furnace or relevant Control Device, or Maintenance of the Furnace or relevant Control Device.*

Except as noted in Guardian's response to Paragraph 23 regarding H2SO4, the Kingsburg and Richburg Facilities and Carleton Line 2 conducted all source/stack tests required by the Consent Decree in accordance with the requirements of the specified Test Method and under representative Operating conditions and the applicable state requirements for each Furnace. Each test was comprised of at least three (3) valid one-hour stack test runs. Any invalid test run was discarded and replaced with an additional valid test run. The test report includes the results of the discarded test run and information why the test run was not valid. Source/stack testing was not conducted during Abnormally Low Production Rate Days, Idling, a Furnace Startup, a Control Device Startup, a Malfunction or Maintenance of the Furnace or relevant Control Device.

I. *Alternative Primary Control Technology (Paragraphs 32 to 38).*

Paragraphs 32 to 38 are not applicable since no alternative Primary Control Technology was proposed for controlling NOx, SO2, PM, or H2SO4 emissions for any of the Covered Facilities in this reporting period.

J. Abnormally Low Production Rate Days

39. Table 7 lists the threshold values for an Abnormally Low Production Rate Day for each Furnace at a Covered Facility.

TABLE 7: Abnormally Low Production Rate Day Threshold

Facility and Furnace	***Abnormally Low Production Rate Day Threshold (Tons/day)***
Floreffe	*140*
Carleton #1	*192*
Carleton #2	*228*
Corsicana	*218*
Richburg	*270*
Geneva	*256*
Dewitt	*245*

40. If increased production capacity at a Furnace is authorized by a revised Permit limit, the Abnormally Low Production Rate Day Threshold will be 35 percent of the new permitted production (or design production, where there is no permitted production) as determined on a daily basis.

The Dewitt Facility received authorization to increase its production capacity with the CTR project scheduled in 2017. The Abnormally Low Production Rate Day Threshold is revised to be 35 percent of the newly permitted production on a daily basis which is [redacted] tons per day.

K. Recordkeeping

41. Guardian shall record: 1) the hourly NOx emissions (ppm) before and after the SCR as calculated using CEMS data; the hourly SO2 emissions (lb per hour) as calculated using CEMS data; 2) the daily production rate; and 3) if applicable, the 30-day rolling average emissions (removal efficiency or rate).

This requirement is only applicable to the Kingsburg Facility and Carleton Line 2 for this reporting period. Except as noted below, the Kingsburg Facility and Carleton Line 2 recorded 1) the hourly NOx emissions (ppm) before and after the SCR as calculated using CEMS data and the hourly SO2 emissions (lb per hour) as calculated using CEMS data, 2) the daily production rate, and 3) the 30-day Rolling Average Emissions Rate for SO2 and the removal efficiency for NOx.

On February 20, 2017, during the process of finalizing this Annual Report, Guardian corporate and legal personnel were made aware of a potential data loss at the Carleton Facility. The identified causes of this issue are as follows: on September 29, 2106, Carleton Facility personnel discovered that the CEMS data acquisition system (DAS) computer failed that morning. Carleton Facility personnel believed that this failure occurred when the computer was powered off

for scheduled uninterruptible power supply (UPS) power work during the CTR. occurring at that time on the Carleton Line 2 Furnace. As a result of the computer failure, The computer's hard drive was replaced and the backup image was installed on the hard drive. Unknown to the personnel involved, the image (backup) was as of May 23, 2016.

At this point the Carleton Facility personnel contacted a third-party vendor to restore the DAS computer to the current data, once the DAS computer was connected to the network, the first action performed was to update the server. At this point, the DAS computer overwrote all the data from May 23 through August 2016 with zeros in the backup server, just as if the data was not created. Furthermore, this server was not backed up. The DAS does provide a daily email of some of the calculated emission data to certain employees. Guardian corporate and legal personnel have been informed that until the corporate request on February 20, 2017, the Carleton Facility employees believed that they had all the CD required data in emails or in a hardcopy.

For this period, The Carleton Facility does have a record of all required 30-Day Rolling Average Emission Rates for NOx and SO2 and the hourly stack NOx emission (ppmd at 7% O2), SO2 (lb per hour) and NOx Removal Efficiency. The data that was overwritten for which Carleton Facility no longer has a record includes the hourly inlet NOx (ppmd at 7% O2). Importantly, because the hourly NOx removal efficiency and stack NOx emission (ppmd at 7% O2), are available, the inlet NOx emission (ppmd at 7% O2) has been back-calculated.

42. *For any Operating Day(s) that Guardian excludes from the relevant 30-day Rolling Average NOx Removal Efficiency or 30-day Rolling Average NOx or SO2 Emission Rate, it shall record: 1) the date; 2) the relevant exception pursuant to which Guardian is excluding the emissions generated during that Operating Day (or Days) (i.e. Abnormally Low Production Rate Day, Idling, start-up as defined by SIP-approved District Rule 4354, Furnace Startup, Control Device Startup, Malfunction, or Maintenance); 3) a calculation of the applicable emission limit (in pounds of NOx and/or SO2 per Day) according to the equations in 10.c.ii., 10.c.iii., 12.e., 15.c.ii.-iv., and 16.b.; 4) the emissions recorded by the CEMS (in pounds of NOx and/or SO2 per Day); and 5) if it was a Malfunction an explanation and any corrective actions taken. For any Operating Day(s) excluded for Maintenance of a Control Device or Furnace, Guardian shall also record the total number of hours during which Maintenance occurred.*

This paragraph is only applicable to the Kingsburg Facility and Carleton Line 2 for this reporting period. For any Operating Day(s) that the Kingsburg Facility and Carleton Line 2 excluded from the relevant 30-day Rolling Average NOx Removal Efficiency or 30-day Rolling Average SO2 Emission Rate, the Facilities recorded 1) the date, 2) the relevant exception pursuant to which Guardian excluded the emissions generated during that Operating Day(s), 3) a calculation of

the applicable emission limit calculated according to the equations in 10.c.ii., 10.c.iii., 12.e., 15.c.ii.-iv., and 16.b. and 4) the emissions recorded by the CEMS (in pounds of NOx and/or SO2 per Day). For any Malfunction, there is an explanation and the corrective actions taken were recorded. Also, for any Operating Day(s) excluded for Maintenance of the Control Device or Furnace, the total number of hours during which Maintenance occurred is recorded.

43. Recordkeeping During Furnace Startup. In addition to the recordkeeping requirements listed above, Guardian must also keep the following records during Furnace Startup.

a. The amount of salt cake added to the batch materials in pounds per Ton of total batch material (including cullet);

b. The total natural gas usage in that Furnace (in million standard cubic feet);

c. The excess oxygen percentage (as measured and recorded by the oxygen sensor in the crown of each Furnace regenerator at least once per shift); and

d. A description of whether thermal blankets or similar techniques were used during this period.

This paragraph is only applicable to Carleton Line 2 for this reporting period. Carleton Line 2 complied with all the reporting requirements under Paragraph 43 and recorded the required data.

4. ***Any problems encountered or anticipated in implementing Section IV (Compliance Requirements), together with implemented or proposed solutions;***

Paragraph 8 of Section IV - Corsicana Interim NOx Emission Limit 180-Day Data Collection

The Corsicana Facility experienced two lightning strikes since the beginning of the 180-Day data collection period, which started on April 5, 2016. The first strike occurred on April 17 followed by another one on July 4. The strikes caused extended down time of the Facility's CEMS. After each strike, the Corsicana Facility took immediate actions to get the CEMS back on-line. Despite the Corsicana Facility's best efforts to fulfill the 180-Day data collection obligation, the Corsicana Facility could not have adequate reliable data by the end of the 180-Day data collection period (October 4, 2016). Therefore, on August 19, 2016 Guardian submitted a request to EPA to extend the Corsicana Facility 180-Day NOx CEMS data collection period to December 31, 2016.

Proposed Minor Amendments to the CD which have been approved by EPA and added in the draft first amendment which is in process:

Paragraph 8 of Section IV - Compliance with the H2SO4 emission limits using EPA CTM 13A, or 13B

Paragraph 43 of Section IV - Excess O2 measurement during furnace startup

Paragraph 43 of the CD states that Guardian should keep records of "the excess oxygen percentage (as measured and recorded by the oxygen sensor in the crown of each Furnace regenerator at least once per shift)" during Furnace Startup. In the correspondence dated August 18, 2016 to EPA, Guardian detailed the procedure to be used to demonstrate compliance with this requirement.

Paragraphs 10.c and 15 of Section IV- Start of compliance for 30-day Rolling Averages

These Paragraphs state that the 30-day rolling averages for the compliance demonstration should commence on the first Operating Day after completing the Control Device Startup. In an email correspondence to Mr. Gregory Fried dated September 12, 2016, Guardian requested "first Operating" be changed to 30th Operating Day." to allow for the collection of sufficient data for averaging period.

Paragraph 6.r of Section IV - Pulled glass daily production Rate measurements requirements

Paragraph 6.r of the CD states that ""Daily Glass Production" shall mean the Tons of glass produced per Day from the Furnace (commonly known as "pulled") as measured by the measurement method or the weight method. It will be the composite of approximately 18 samples at approximately 80 minute intervals which are averaged to give a daily production rate." In an email correspondence to Mr. Gregory Fried dated September 12, 2016, Guardian requested "the composite of approximately 18 samples" be changed to "a weighted average of approximately 12 samples" to provide operational flexibility.

Paragraph 26.d of Section IV - CTR Furnace Startup CEMS Recertification Timing

Paragraph 26.d states that: "Guardian shall commence such CEMS re-Certification no later than thirty (30) Days after Furnace Startup commences or a Control Device Startup period concludes. If a Furnace Startup and a Control Device Startup happen at the same time, then the CEMS re-certification shall not be conducted until the first Operating Day after the later startup event concludes." In an email correspondence to Ms. Katie McClintock, dated June 30, 2016, Guardian requested that: "Furnace Startup commences" be changed to "Furnace Startup concludes" to allow adequate time to conduct the testing.

Paragraph 56.f - Requirements for amending Title V permit

Guardian requested to only incorporate reporting requirements under Paragraphs 41-43 in the Title V permit, not the CD reporting requirements in Paragraphs 63-68.

5. ***A summary of all permitting activity pertaining to compliance with the Consent Decree and the status of any necessary Permit applications;***

Paragraph 55 and 56 Compliance:

- Floreffe Facility Notice of Operating Permit Termination County of Allegheny, November 23, 2015.

- Carleton Line 2 submitted a Permit to Install (PTI) application on July 25, 2014 and received an approval of PTI 105-14 Control Devices, CEMS October 16, 2014.
- A petition request was submitted for Carleton Line 2 to Michigan Department of Environmental Quality (MDEQ) to merge PTI into Title V on February 15, 2015 and received the merged Title V permit on May 5, 2015 (MI-ROP-B1877-2014a).
- Carleton Line 2 submitted a Letter of Notice for Carleton Line 2 Facility CTR on January 16, 2016.
- Carleton Line 2 CD Amendment to Title V permit was submitted to MDEQ on Dec 27, 2016.
- The Dewitt Facility submitted an Air Construction Permit to Install application on January 12, 2016 and received the Iowa Department of Natural Resources (DNR) Permit number 95-A-154-P4 issued July 28, 2016 incorporating the Consent Decree requirements and approval to increase production with the CTR project scheduled for 2017.
- The Corsicana Facility submitted an amendment to its Operating Permit to install the CEMS on the Furnace stack on April 4, 2016.
- The Corsicana Facility submitted a Pollution Control Project (PCP) Standard Permit Application on November 10, 2014 to install low NOx burners which were installed on November 10, 2015.
- The Kingsburg Facility submitted an Authority to Construct (ATC) permit application on August 27, 2015 to install an inlet CEMS and applied for minor modification to its Title V permit on November 17, 2015 to install the Inlet CEMS.
- The Kingsburg Facility submitted an Authority to Construct (ATC) permit application to incorporate all CD requirements into its Title V permit on November 20, 2016.
- The Geneva Facility Title V Permit Significant Modification Application for Furnace Capacity Increase and Emission Control Device application was submitted on March 14, 2016 incorporating the CD requirements and approval to increase production with the CTR scheduled for 2018.
- The Geneva Facility received a draft revised Title V Permit on December 12, 2016, which has completed its public comment review and is currently in review with Region 2 EPA.

6. ***For each Furnace that is subject to a final emissions limit in Section IV, a record of that Furnace's daily 30-day Rolling Average Removal Efficiency or 30-day Rolling Average Rate for NOx and SO_2;***

   This requirement is only applicable to Carleton Line 2 and the Kingsburg Facility for this reporting period. Table 1 of Appendix A provides the requested information.

7. ***The actual monthly emissions of NOx and SO_2, from each Furnace at the Covered Facilities measured using CEMS, and for PM and H_2SO_4 emissions at the Covered Facilities as estimated based on the most recent source/stack test(s);***

This requirement is applicable to all Covered Facilities. Table 2 of Appendix A provides the requested information.

8. ***The results of any source/stack testing performed at any Furnace at a Covered Facility;***

This requirement is applicable to all Covered Facilities. Table 3 of Appendix A provides the stack testing results and Table 4 provides the CEMS Certification results.

9. ***Monthly production of glass;***

This requirement is applicable to all Covered Facilities. Table 5 of Appendix A provides the requested information

10. ***A list of Days excluded from the 30-day Rolling Average Emission Rate and 30-day Rolling Average NOx Removal Efficiency due to an Abnormally Low Production Rate Day, Idling, Furnace Startup, Malfunction, or Maintenance;***

This requirement is only applicable to Carleton Line 2 and the Kingsburg Facility for this reporting period. Table 6 of Appendix A provides the requested information.

11. ***The pounds of NOx or SO_2 emitted from each Day excluded from the 30-day Rolling Averages (where applicable);***

This requirement is only applicable to Carleton Line 2 and the Kingsburg Facility for this reporting period. Table 7 of Appendix A provides the requested information.

12. ***Payment of any civil or stipulated penalties;***

Copy of the payments are included in Appendix B.

13. ***Any other information required to be recorded in Paragraphs 41-43.***

Table 8 in Appendix C contains the information required in Paragraph 41 except the 30-Day Rolling Average emissions which are already provided in response to item 6 above . Table 9 in Appendix C contains the information required in Paragraph 42. The data required under Paragraph 43 for the Carleton Line 2 CTR completed during this reporting period is included in Table 10 of Appendix C.

PARAGRAPH 64

Each annual report shall also include a description of any non-compliance with the requirements of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If Guardian violates, or has reason to believe that it may have violated, any requirement of this ConsentDecree, Guardian shall notify the United States and applicable Plaintiff-Intervenor of such violation and its likely duration, in writing and by telephone, fax, or email, within ten (10) Daysof the Day Guardian first became aware of the violation or potential violation. This notice shallprovide an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Guardian shall explain this in the report. Guardian shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of the cause of the violation, within 30 Days of the Day Guardian first becomes aware of the cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Guardian of its obligation to provide the notice required by Section XI (Force Majeure) of this Consent Decree.

During this reporting period, four potential non-compliances with the requirements of the CD occurred:

1. On Feb 17, 2016, Guardian discovered that the 30-Day Rolling Average NOx Removal Efficiency ("30-Day Average") data for the Kingsburg Facility was below 80% as required under Paragraph 10.b. of the CD. This violation was occurred due to an error in the DAS for calculating the 30-Day Average and the lack of routine DAS data review by the Facility personnel. Guardian immediately took actions to address the violation and increased the ammonia in the system as much as reasonably possible to correct the 30-Day Average as soon as possible. The violation began on December 17, 2015 and ended on February 27, 2016. Guardian notified all parties of this violation and within 10 days of discovery on February 24, 2016. It should be noted that the notification projected compliance date of February 26, 2016. The Removal Efficiency was [redacted] on that day. To prevent any potential future occurences, the DAS contractor was retained to review, verify, and correct the DAS calculations. Furthermore, a new SCR catalyst bed was installed in May of 2016 to improve SCR performance.

2. The first H2SO4 compliance stack testing conducted at Carleton Line 2 using Conditional Test Method (CTM) 13B on June 21-22, 2015, showed an order of magnitude higher values (13.3 lbs/hr) than the CD limit of 1.6 lbs/hr, which is considered at the time an outlier and faulty stack test. Another stack test conducted on October 22, 2015 using CTM 13B showed inconsistent results. . On February 16 to 18, 2016, Guardian conducted both CTM 13B and CTM13 testing simultaneously to see if there are problems with CTM13B biasing results high due to sulfur compounds being picked up as acid in the test impinger train. The February test results showed lower than CD limit for both test methods. On May 23, 2016

Guardian submitted a request to EPA to allow using CTM 13 for measuring H2SO4 emissions from float glass furnace stacks. The request was approved by EPA and Test Method CTM 13 was added in the draft amended CD which is in process.

3. On August 3, 2016, Guardian received the draft Emissions Test Report prepared by TRC Environmental Corporation (TRC) regarding the Kingsburg H2SO4 compliance stack testing performed on June 8 and 9, 2016. The test results showed 2.3 lb/hr using CTM 13B and 1.3 lb/hr using CTM 13. Guardian notified all parties of this violation within 10 days of discovery on August 11, 2016. The identified causes of this violation and actions taken were discussed in item 2 above.
   As a result of this issue, changes to the backup process were made. Both the DAS computer and the server that is used for DAS computer back up is now on a backed up server. The process is to back up the DAS computer and the server is then backed up daily. Therefore, the Carleton Facility DAS now has a redundant backup. In the unlikely event that a failure of the DAS computer occurs, the most data lost should be 24 hours. Another action taken is also to have another back up the DAS computer on a quarterly basis. Furthermore, whenever the DAS software is updated, a backup would also occur. Lastly, the back-calculated hourly inlet NOx in ppmd at 7% O2 for that period were provided in the Annual Report in response to Paragraph 41 as flagged and all the data are kept in the Plant EHS record.

4. On February 20, 2017, during the process of finalizing this Annual Report, Guardian corporate and legal personnel were made aware of a potential data loss at the Carleton Facility. The identified causes of this issue are as follows: on September 29, 2106, Carleton Facility personnel discovered that the CEMS data acquisition system (DAS) computer failed that morning. Carleton Facility personnel believed that this failure occurred when the computer was powered off for scheduled uninterruptible power supply (UPS) power work during the CTR. occurring at that time on the Carleton Line 2 Furnace. As a result of the computer failure, The computer's hard drive was replaced and the backup image was installed on the hard drive. Unknown to the personnel involved, the image (backup) was as of May 23, 2016.
   At this point the Carleton Facility personnel contacted a third-party vendor to restore the DAS computer to the current data, once the DAS computer was connected to the network, the first action performed was to update the server. At this point, the DAS computer overwrote all the data from May 23 through August 2016 with zeros in the backup server, just as if the data was not created. Furthermore, this server was not backed up. The DAS does provide a daily email of some of the calculated emission data to certain employees. Guardian corporate and legal personnel have been informed that Uuntil the corporate request on February 20, 2017, the Carleton Facility employees believed that they had all the CD required data in emails or in a hardcopy.

   For this period, The Carleton Facility does have a record of all required 30-Day Rolling Average Emission Rates for NOx and SO2 and the hourly stack NOx emission (ppmd at 7% O2), SO2 (lb per hour) and NOx Removal Efficiency. The data that was overwritten for which Carleton Facility no longer has a record includes

the hourly inlet NOx (ppmd at 7% O2). Importantly, because the hourly NOx removal efficiency and stack NOx emission (ppmd at 7% O2), are available, the inlet NOx emission (ppmd at 7% O2) has been back-calculated.

As a result of this issue, changes to the backup process were made. Both the DAS computer and the server that is used for DAS computer back up is now on a backed up server. The process is to back up the DAS computer and the server is then backed up daily. Therefore, the Carleton Facility DAS now has a redundant backup. In the unlikely event that a failure of the DAS computer occurs, the most data lost should be 24 hours. Another action taken is also to have another back up of the DAS computer on a quarterly basis. Furthermore, whenever the DAS software is updated, a backup would also occur. Lastly, the back-calculated hourly inlet NOx emission (ppmd at 7% O2) for that period were provided in the Annual Report in response to Paragraph 41 as flagged.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

_____ _____

John Buckner
Glass - Director of Operations - USCA
Guardian Industries Corp.
248.340.2179 jbuckner@guardian.com
2300 Harmon Rd, Auburn Hills, MI 48326

Date